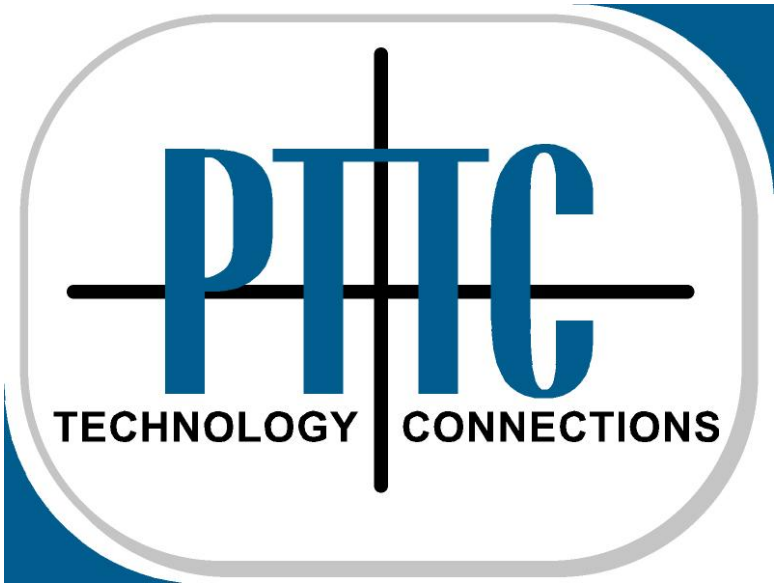

Written Testimony of Brook Phifer

on Behalf of the

Petroleum Technology Transfer Council (PTTC)

Submitted to

House Committee on Resources Subcommittee on Energy and Mineral Resources

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Written Testimony of the

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PTTC

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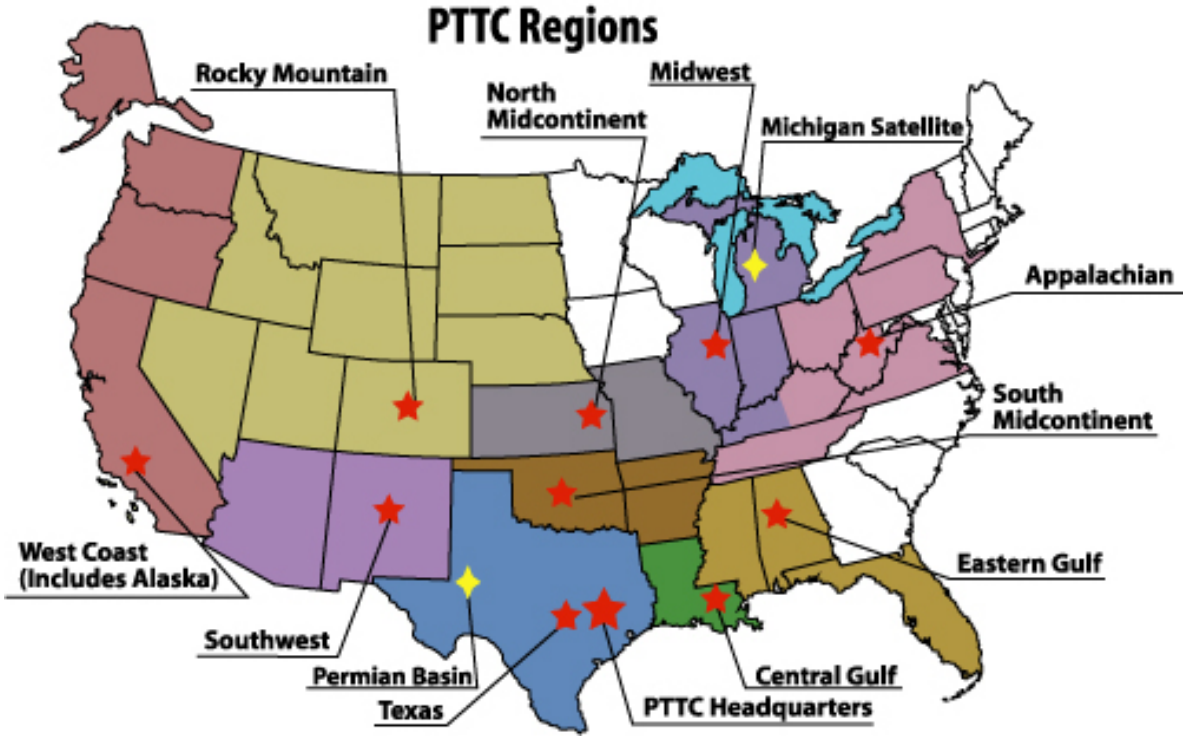
Advances in Technology: Innovations in the Domestic Energy and Mineral Sector

This testimony is submitted by Brook Phifer, President of NiCo Resources LLC, a Rocky Mountain oil and gas producer, as Chairman of the Petroleum Technology Transfer Council, or PTTC. The PTTC appreciates this opportunity to discuss technology issues in the domestic energy and mineral sector as it relates to our mission: to assist U.S. independent oil and natural gas producers make timely, informed technology decisions, resulting in increased production of oil and gas (in many cases prolonging the production life of the well), at a lower cost, and in a more environmentally compatible manner.

The impact of technology applications on the tens of thousands of wells that contribute to homeland production is substantial. While this testimony deals with the sharing of technical advances and application, it is important to note where the technology is originating.

- Research Centers Within Large Service or Operating Companies. This was once a focal point for technology advancement. In the past decade, research and development has declined significantly as it pertains to mature US operations and instead focused primarily on international areas.
- Joint Industry Projects and Consortia. Working together to leverage precious R&D dollars, joint industry projects and consortia pool resources, focus on certain technical barrier areas and share this information within a larger workgroup, eventually disseminating the results.
- National Laboratories. The National Laboratories have teamed with industry partners to address a variety of issues bottlenecking domestic production. Results have led to further advances in technology and paved the way for application.
- Demonstrations Projects. Independent producers accept proven and applied technologies, and a key focus area of the National Energy Technology Laboratory has yielded many demonstration projects to prove up ideas with broad application across many mature areas of production. Examples of these demonstration programs include the Stripper Well Consortium, Microhole Initiative and Field Technology Implementation with Independents.
- Universities. Basic research is provided by the university systems across the country that are linked with the PTTC technology transfer program as listed in table below. This is also an important source for new talent entering the energy field that are tasked with preparing people for science professions.
- Other Industry Applications. A significant amount of research and development originating in outside industries such as defense and aerospace are finding applicable within the energy sector. Communicating these findings is also benefiting domestic producers.

With the urging of domestic producers across the country, PTTC was formed in 1994 as a national not-for-profit organization tasked with communicating these results to the many mature basins in 33 oil and natural gas producing states. The organization is a cooperative effort between the independent producers, the Department of Energy (DOE), states, geological surveys and universities.
Funds from the DOE are matched with industry contributions and direct support from several state governments, universities and state geological surveys, forming a unique partnership between federal, state and industry.



The keys to PTTC having a national impact with a small budget are 1) the volunteers who serve on the Board and ten Regional Producer Advisory Groups and 2) the 10 regional organizations listed on the following table. The actual transfer of technology is accomplished through a five person national staff and the ten regional organizations. They convey specific technologies that are proven to work in that particular region or area. The list of the regional organizations is attached at the end of this testimony. Lets now look at how PTTC transfers technical information.

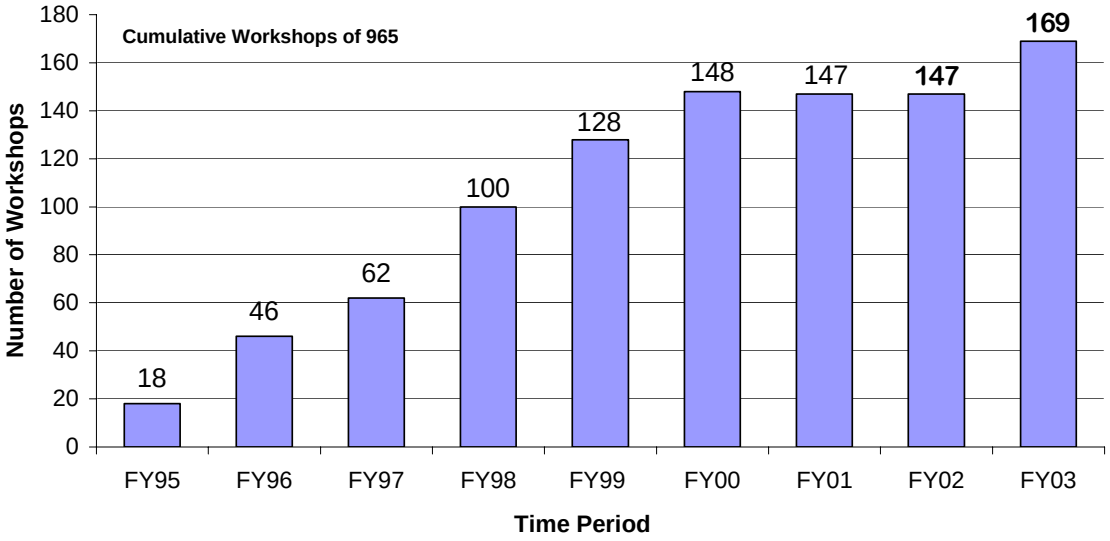
Technology Transfer Programs Showing Results

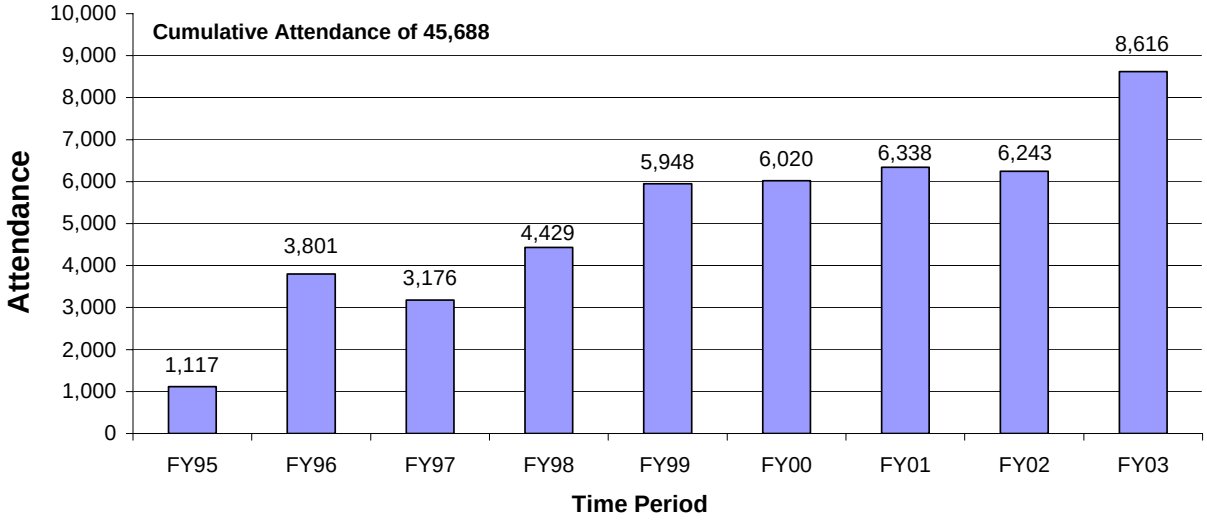
In the 10 years of transferring results to thousands of industry people, PTTC has achieved its original goals—and gained the widespread credibility within the upstream petroleum industry that is vital to success. PTTC programs disseminate cost-effective technological solutions addressing a wide range of problems – exploration, drilling and completion, operations and production, reservoir and development, as well as environmental compliance.

Following are the methods that PTTC utilizes to transfer information to the producing community focused on expanding industry awareness and technology usage at the national and regional level:

- **Technology workshops.** PTTC held over 160 workshops last year and plans to hold just as many this year. Cumulatively, more than 50,000 individuals have attended PTTC workshops since inception, providing face-to-face contact between solution providers and end users. To leverage limited resources, many PTTC events are held with other organizations such as professional societies and state/regional producers associations.

WORKSHOP STATISTICS

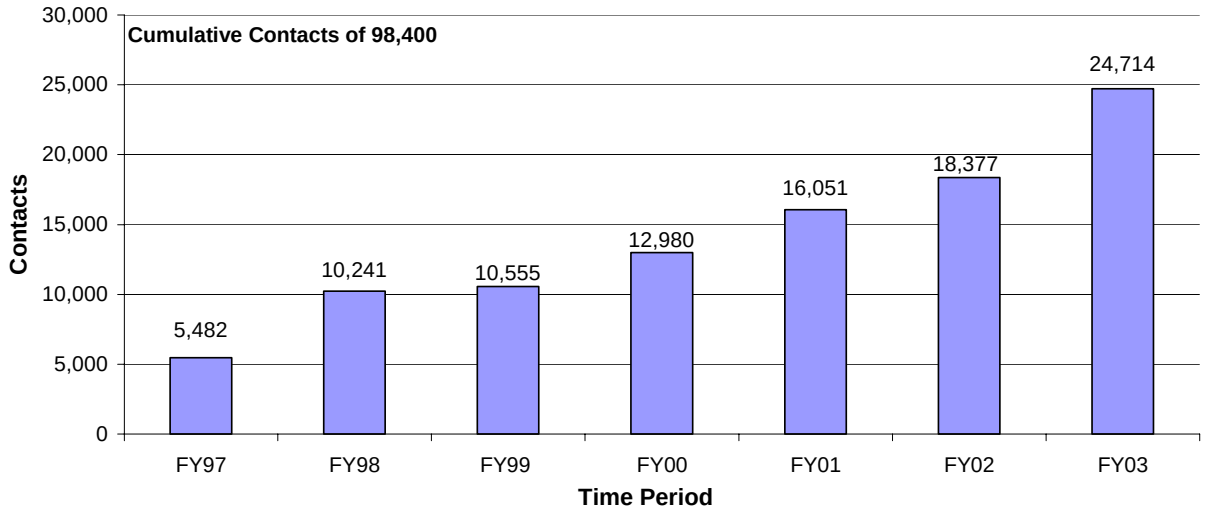




- **Workshops with DOE.** PTTC has sponsored many workshops to transfer the results of DOE programs to independents, including the Technologies for Independents Program. In upcoming events, PTTC will be featuring DOE-funded research in various enhanced recovery projects, and stimulation of natural gas wells, such as the MicroDrilling Project and the Stripper Well Consortium in addition to a produced water operator's manual. The key to

success here is the demonstration or proving of concepts that immediately have a widespread application.

- **Regional resource centers**. Independents contact their local PTTC resource center for a variety of services: (1) access to information/data resources, (2) expert response to inquiries, (3) demonstration and training for E&P software, (4) information products, (5) help with understanding technological problems and opportunities, (6) access to special purpose databases, and (7) other outreach efforts. PTTC receives daily questions on technical data and has accumulated over 100,000 contacts to date.



- **E&P Software Training.** PTTC is well respected in producing quality training on software packages that reduce risk and keep marginal well producing for longer periods, thereby gaining more of recoverable hydrocarbons. The courses offered are filled to capacity on a regular basis, which indicates the need is there and relevance is confirmed.

- **Internet websites**. With a national website plus 12 regional and satellite sites, PTTC's electronic network is a key delivery system for oil and gas information, data, case studies, calendars of events, and technical summaries. Industry usage is increasing as the on-line technical content and search capabilities grow.

- **Newsletters.** The 16-page, quarterly national newsletter, *PTTC Network News*, reaches over 16,000 readers (approximately 65% are independent E&P companies). Regional newsletters also inform thousands of local producers about technology transfer activities and the results of DOE technical programs.

- **Tech Alerts**. PTTC sends out electronic notices every 3-4 weeks to over 6,000 recipients in the energy community. These alerts highlight technical industry issues, DOE RD&D results and program solicitations, PTTC initiatives as well as announcements of upcoming workshops, newsletters and technical successes.

- **Case Studies/Reports.** PTTC has developed many producer-vendor case studies and are releasing new Petroleum Technology Digest case studies on a monthly basis within *World Oil*, a respected trade journal reaching 34,000 readers. These success stories from companies that have successfully applied a technology are popular at showing other producers what is working, thereby reducing risk of application for others and increasing widespread usage of

solid ideas that work. A monthly technology-oriented column within *American Oil and Gas Reporter*, a trade journal targeting independent producers, reaches another 14,000 readers.

- **Region-Specific Products.** Several regions have developed products specific to local needs, such as the Louisiana Desktop Well Reference on CD-ROM, which provides lease and production data. The West Coast Region is developing templates to assist operators reduce produced water production with the participation of the state of California. This has broad appeal for the entire country. There are many similar examples in all of the regions.

Here are a few examples of program results that indicate how the technology transfer program leverages limited resources that benefit states and ultimately consumers.

Electricity Savings in California

In 2002, the PTTC West Coast Region was tasked by the California Energy Commission and the Electrical Power Research Institute (EPRI) with the study of more than one thousand California oil wells. Many were found to be operationally energy-inefficient. This study led to a rebate program through the California Public Utilities Commission, administered by Global Energy Partners resulting in an issuance of $900,000 in rebates to independents and an electricity savings of more than 16 million KWh. It is key to note that implemented changes not only led to the lower operating costs which increases the economic life of marginal wells, but it also reduced the demand on the California power grid. Additionally, less water is now being produced and brought to the surface from the participating wells, lessening the environmental impact of treating, handling and disposal. Considering cost savings and more efficient production, these applications would have a tremendous broad potential in terms of maintaining domestic production by small producers and reducing power consumption if applied on a national basis. A program such as this would not be possible without federal, state and industry working together to solve technical challenges.

Trenton-Black River in Appalachian Basin

The high potential area in the Appalachian basin continues to be the deep Trenton-Black River, a high technology, high-risk play that began in New York in 1995. Through PTTC's Appalachian workshops producers are offered opportunities to learn about technologies that have helped them produce in the extremely complex and uniquely varying basin (by the end of 2003, approximately 230 wells had been drilled in New York with another 30 in West Virginia and Pennsylvania. Annual gas production now exceeds 25Bcf per year, with most production coming from New York. West Virginia development has been slower with more mixed results. Although high potential, the reservoirs are complex and vary from area to area. Industry quickly realized they needed to know more, which led PTTC's Appalachian Region to coordinate technology transfer efforts.

PTTC has conducted multiple workshops, drawing more than 600 participants over the past 6 years. The knowledge shared, plus interaction among the participants, truly has led to improved understanding of geological and exploration concepts. To learn even more, a consortium with 17 paying companies, geological surveys in Appalachian states, and DOE's National Energy Technology Laboratory embarked on a two-year research effort this past fall.

Software Training for Rocky Mountain Region

Geoscience software has a major impact in the efficient development of one of America's largest natural gas potential area, the Rocky Mountain States. This software enables the users to analyze all the geoscience date better and faster. Software developers and others offer software training, but generally not locally and all too frequently from an "academic" perspective rather than a "professional user" perspective.

Early on the Rocky Mountain Region of PTTC pulled together the Colorado School of Mines, American Association of Petroleum Geologists, and industry donors to build a training lab. Courses were developed and experienced geoscience trainers identified. The Region now offers more than 20 continuously updated courses per year. During the industry downturn of the late 1990s, the software training program was a major mid-career resource for geoscientists retooling themselves.

Follow-up calling to participants reinforces there are three ways value is realized: 1) savings in software training costs, which alone are estimated to exceed $4.5 million, 2) productivity gains when experienced people proficiently apply the software, and 3) since there is a limited supply of geoscientists and engineers, more oil and gas is discovered. These benefits are orders of magnitude above the cost of providing training. Similarly, in coordination with the Colorado School of Mines and the American Association of Petroleum Geologists as well as other industry donors, the PTTC Rocky Mountain Region has built computer training labs, and now offer more than 20 continuously updated courses per year for geoscience software. This has allowed producers to analyze data better and faster, in a region that represents one of America's largest natural gas potential areas.

These three examples serve to highlight a few of the many focused areas of technology sharing and application that yields near term results.

Conclusion

To economically address most of our domestic oil and gas drilling and production problems requires the integration of solutions that put all the “pieces of the puzzle” together. The technology can come from a variety of sources and I can tell you today that the PTTC has successfully integrated the needs of the operators with these sources. Most of our domestic production comes from regions of our country where the major service companies no longer focus and the major oil companies have sold their properties to smaller independent oil and gas companies. The PTTC in return identifies technical needs to the DOE to assist them in their R&D development programs. With the technology the PTTC transfers, independents are timely and efficiently developing new sources of natural gas supplies and more efficiently producing America’s oil and gas reserves.

PTTC performs various technology transfer functions to inform producers of potential solutions to economically address their problems. Where answers are not available, PTTC reports the technology gaps and their relative urgency to the R&D community. This industry feedback is intended to help guide the direction and priorities of research conducted by both the public and private sector.

PTTC has assisted DOE in the past years to target upstream R&D efforts on practical, short-term projects with immediate applications in the field. PTTC technology workshops serve as catalysts for bringing new partners into R&D consortia and other industry groups. An important benefit is that small independent operating companies (those without sufficient staff or budget for R&D) gain access to cost-efficient technologies to maximize the recovery of oil and natural gas reserves.

As one successful example of a federal, state and industry partnership, PTTC delivers demonstrable benefits to the producing industry and to the nation. Detailed information can be provided for the record from independent producers who have learned about new technological solutions through PTTC and used them in the field. Thank you for this opportunity to submit this testimony, and please let us know if PTTC can supply any additional information for the record.

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